

IX. Black River, Catahoula Parish, Louisiana.

*Lampsilis fallaciosus* (Sm.)      *Quadrula heros dombeyana* Val.

Simps.      "      *trapezoides* Lea.

*Obliquaria reflexa* Raf.

VALVATIDAE OF THE WESTERN NORTH AMERICA.

BY HAROLD HANNIBAL.

While preparing a paper on the tertiary fresh-water fossils of Western North America it became necessary to go over the literature and examine all the *Valvatidae* available. This included specimens from the type localities of *V. utahensis* and *V. virens* and part of the original lot from which *V. humeralis californica* was described. There is therefore no doubt as to the authenticity of the determinations.

Two new fossil species have turned up in the Upper Lahontan (Quaternary) of Nevada and Southern Oregon, descriptions of which are given here. In a paper on fresh-water fossils now in progress, all the species will be figured together for comparison.

On account of the complex and unsatisfactory nature of a key the following table has been devised :

| Broadly umbilicate.                   |                      |   |                      | Narrowly umbilicate. |
|---------------------------------------|----------------------|---|----------------------|----------------------|
| <i>V. whitei.</i>                     | <i>V. humeralis.</i> | <i>V. calli.</i>                              | <i>V. virens.</i>    | <i>V. utahensis.</i> |
| Spire barely raised above body whorl. | Rather low.          | Very low to very high.                        | Moderately high.     | High.                |
| Smooth.                               | Smooth.              | Smooth, carinate, or marked by spiral striae. | Fine growth striae.  | Smooth.              |
| Whorls rounded beneath.               | Somewhat flattened.  | Rounded or carinate.                          | Rounded.             | Somewhat angular.    |
| ?                                     | Blue-green or brown. | ?   | Light to dark green. | Pellucid.            |

*V. lewisii* Currier and *V. sincera* Say have been reported from west of the Rocky Mountains, but it is probable that all the specimens will prove to be *V. humeralis*. This is a somewhat variable and badly misunderstood species. It is apparently widely distributed over all the Pacific slope.

With the exception of *V. humeralis* all the species are abundant wherever they occur, but they are sporadic. This species is also sporadic but seldom occurs in large numbers.

#### VALVATA HUMERALIS Say.

*Valvata humeralis* Say. New Harm. Diss., II, 1829, p. 244. Mexico.

*Valvata humeralis californica* Pilsbry. NAUT., XXII, 1908, p. 82. Bear Lake, Cal.

Small, smooth, brown or blue-green, spire variable but always low, umbilicus moderately broad, sutures slightly impressed. Characterized by a noticeable flattening about the umbilicus.

The barely matured specimens from Bear Lake do not show this character as noticeably as others in the writer's collection. This species has been identified by west coast conchologists as *V. virens*, *V. lewisii*, and *V. sincera*. The latter two can be easily eliminated but the specimens from several of the localities given with a question mark under *V. virens* may on re-examination prove to be *V. humeralis*. Not known as fossil.

#### DISTRIBUTION.<sup>1</sup>

##### Mexico.

##### California.

- \* Bear Lake, San Bernardino Mts. (Berry).
- \* Bluff Lake, San Bernardino Mts. (Berry).
- \* Soap Lake, San Benito Valley (Hannibal).
- \* Pond, Likely, South Pitt Valley (Hannibal).
- Slough, De Witte, Honey Lake Valley (Hannibal).

##### Oregon.

- \* Upper Klamath Lake (Hannibal).

##### Washington.

Lake Washington, Seattle (Randolph).

<sup>1</sup>\* Seen by writer.

? Identification doubted.

*Idaho.*

Near Franklin (Hemphill).

*Utah.*

Near Salt Lake City (Yarrow and Hemphill).

VALVATA VIRENS *Tryon.*

*Valvata virens* Tryon, Proc. Acad. Nat. Sci., Phila., 1863, p. 148, pl. 1, fig. 11.

Spire moderately elevated, whorls rounded, umbilicus rather narrow, sutures moderately deep, shell marked by fine transverse striae, light green to deep green color.

It has been the custom to refer any western American *Valvata* of a green color or with an elevated spire to *V. virens*. The writer does not know of its authentic occurrence north of Clear Lake. Call's Great Basin specimens are *V. calli*. References to living specimens from northeastern California and southeastern Oregon are probably *V. humeralis*.

*California.*

\* Clear Lake (Tryon, Cooper, Hemphill).

Alameda Co. (Cooper).

Antioch (Carlton).

\* Pond near Watsonville (Laws, Hannibal).

? Willow Creek, Lassen Co. (McGregor).

*Oregon.*

? Grant's Lake (Cooper).

*British Columbia.*

? Nanaimo, Vancouver Is. (Dall).

? Lake Laggan, Rocky Mts. (Taylor).

Fossil: Santa Clara Beds (Pliocene).

Gelrich's coal mine, Santa Cruz Mts., Cal. (Cooper).

\* Galabazos Canon, Santa Cruz Mts. (Hannibal).

Kettleman Beds: 10 miles east of Tulare Lake, west border of Kettleman Plains (Watts).

## VALVATA UTAHENSIS Call.

*Valvata sincera* var. *utahensis* Call, Bull. 11, U. S. Geol. Sur., 1884, p. 44, pl. vi, fig. 1-3.

Characterized by its tabulated whorls, well elevated spire, and very narrow umbilicus, sutures moderately deep; lip slightly diagonal, usually angular below. Shell smooth, pellucid.

This species is known only from near the type locality. It reminds one of *V. piscinalis* of Europe.

*Utah.*

\* Leli, Utah Lake, near head of Jordan River (Call).

Fossil: Semifossil, Bonneville Basin, Utah (Call.)

VALVATA CALLI n. sp.

*Valvata virens* Call, Bull. 11, U. S. Geol. Sur., 1884, p. 21 (in part).

Shell varying from a high spire as in *V. virens* to a very low spire as in *V. lewisii*; sculpture, smooth, carinate tricarinate or marked by numerous spiral striae. Umbilicus rather narrow; whorls rounded in smooth or striate forms angular in carinate forms. Sutures deeply impressed in high forms, slightly in low. Type tricarinate with moderately elevated spire.

Measurements: *Type*, alt. 4.5 mm., diam. 5.5 mm., diam. of aperture 2 mm.; *flattened specimen*, alt. 4 mm., diam. 6 mm., diam. of aperture 2 mm., Marl, Upper Lahontan Quarternary, near Summer Lake, Ore. (F. M. Anderson).

Also from "Central Nevada, near R. R.," named in honor of the late Robert Ellsworth Call.

VALVATA WHITEI n. sp.

Spire depressed, barely raised above outer whorl, broadly umbilicate two whorls visible beneath; shell rather thick, smooth, marked by very faint growth lines; sutures very slightly impressed, whorls round.

Measurements: Alt. 2.5 mm., diam. 6 mm., diam. of aperture 2.5 mm., Marl, Upper Lahontan, Quarternary, near Summer Lake, Oregon (F. M. Anderson).

This species resembles a very large specimen of *V. humeralis*, but the umbilicus is much broader in specimens of a corresponding size. The species also has a much thicker shell.

Named in honor of the late Dr. C. A. White.

*Stanford University, Cal.*